

OBJECTIVE ALLIANCE 96: A Look at French Navy- U.S. Navy Interoperability

Adam B. Siegel
Robert R. Odell, contributor

DISTRIBUTION STATEMENT A
Approved for Public Release
Distribution Unlimited

19990429 044

Center for Naval Analyses

4401 Ford Avenue • Alexandria, Virginia 22302-1498

DTIC QUALITY INSPECTED 2

Approved for distribution:

Febru:



Linton F. Brooks
Vice President and Director
Policy, Strategy, and Forces Division

This document represents the best opinion of CNA at the time of issue.
It does not necessarily represent the opinion of the Department of the Navy.

~~Document Control and Distribution Section at 703-824-2943.~~
CLEARED FOR PUBLIC RELEASE

REPORT DOCUMENTATION PAGEForm Approved
OMB No. 074-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503

1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE February 1997	3. REPORT TYPE AND DATES COVERED Final	
4. TITLE AND SUBTITLE OBJECTIVE ALLIANCE 96: A Look at French Navy-U.S. Navy Interoperability			5. FUNDING NUMBERS C - N00014-96-D-0001	
6. AUTHOR(S) AB Siegel, RR Odell				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Center for Naval Analyses 4401 Ford Avenue Alexandria, Virginia 22302-1498			8. PERFORMING ORGANIZATION REPORT NUMBER CRM 96-77	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)			10. SPONSORING / MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION / AVAILABILITY STATEMENT Distribution unlimited			12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 Words) As part of an effort to improve their ability to operate together in peacetime, crises, and war, the French Navy and the U.S. Navy held a series of war games to explore interoperability issues over the coming decade. OBJECTIVE ALLIANCE 96, a war game held in Newport in May 1996, challenged the players to explore interoperability issues in a contingency operation in the year 2005. The game focused on sea-based aviation operations and the use of naval aviation for combined power-projection operations. This publication reviews OBJECTIVE ALLIANCE 96 game play and player recommendations, compares it with the 1994 French Navy-U.S. Navy war game, and provides a set of analytical judgements based on the game play and discussions.				
14. SUBJECT TERMS foreign, France, international relations, interoperability, joint military operations, military forces (foreign), military forces (United States), Navy, war games, objective alliance 1996			15. NUMBER OF PAGES 61	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT	

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std. Z39-18
298-102

Contents

Summary	1
A glimpse at analytical judgments	1
Introduction	5
Defining key terms and concepts	7
OBJECTIVE ALLIANCE 96: An overview	9
A review of game discussions	13
Move 1: Issues and discussions.	13
Move 2: Issues and discussions.	20
Move 3: Issues and discussions.	21
OBJECTIVE ALLIANCE 96 syndicate recommendations	25
C4I	25
Air defense at sea.	26
Air operations	27
General	28
JFACC: An example of the need for doctrinal compatibility development	29
Comparing OBJECTIVE ALLIANCE 96 with the 1994 FRUS war game	31
OBJECTIVE ALLIANCE 96: Analytical judgments	33
What is the target integration level?.	33
Closing the technology gap	34
Expanding communications requirements.	34
Burden-sharing interoperability development	35
Moving from compatibility to interoperability	36
Doctrinal compatibility	37

National and higher-level issues	38
Intelligence support compatibility	38
Game design and organization	39
Appendix A: 1994 FRUS game	41
Appendix B: French Navy OBJECTIVE ALLIANCE 96 game objectives.	51
Appendix C: OBJECTIVE ALLIANCE 96 participants	53
Glossary	55
List of figures	57

Summary

As part of an effort to improve their ability to operate together in peacetime, crises, and war, the French Navy and the U.S. Navy have held a series of war games to explore interoperability issues over the coming decade. In May 1996, the two navies continued this effort in a war game held at the Naval War College in Newport, Rhode Island. This war game, OBJECTIVE ALLIANCE 96, challenged the players to explore interoperability issues in a contingency operation in the year 2005. The game focused on sea-based aviation operations and the use of naval aviation for combined power-projection operations. In addition, the game examined the challenges of operating at the highest level of interoperability (combined as opposed to coordinated or independent operations).

Interoperability is built on the basis of compatible doctrine, procedures, and equipment. To move from theoretical compatibility to interoperability requires training—in the classroom, war games, and exercises. OBJECTIVE ALLIANCE 96 highlighted issues across these categories that deserve focus through the coming years to help ensure that the two navies will be able to operate together in the future.

This research memorandum reviews OBJECTIVE ALLIANCE 96 game play and player recommendations, compares OBJECTIVE ALLIANCE 96 with the 1994 French Navy–U.S. Navy war game, and provides a set of analytical judgments based on the game play and discussions.

A glimpse at analytical judgments

Over the past decade, the French Navy and the U.S. Navy have improved their ability to operate together (their interoperability). In part, this derives from real-world activities in the Persian Gulf, Caribbean, and Adriatic. In part, this derives from the French reintegration

with NATO and the conscious attention both navies have paid toward improving their ability to operate together. Despite this progress, however, OBJECTIVE ALLIANCE 96 game play indicates that there is still room for progress.

What is the target integration level?

Before embarking on programs to improve interoperability, the two navies should agree on what is the maximum level of desired interoperability. The highest level of integration—defined as an ability to fly aircraft in mixed sections—is likely to be unachievable, at least not at an affordable cost. Thus, the objective should not be to create “seamless” integration, but to create conditions required for the most effective operations.

Burden-sharing interoperability development

Much of the burden for achieving interoperability will lie with the French Navy. This results, in part, from the predictability of French personnel (relative to U.S. personnel) as to who will be involved in coalition operations. The same French admiral and staff will command the French aircraft carrier battle group (CVBG) in all coalition operations. Thus, French Navy personnel continuity is more likely than U.S. Navy continuity between one coalition exercise or operation and the next.

Moving from compatibility to interoperability in a crisis

Interoperability relies on compatible doctrine, procedures, and equipment. Training develops this compatibility into interoperability. With a slowly developing contingency, preexisting compatibility can be built on to achieve interoperability. During a short-notice contingency operation, however, prior training will be required for effective combined operations.

A choice of investment level exists—to aim for compatibility as the basis for future interoperability in extended crises or to attempt to develop interoperability in peacetime as the basis for combined operations in rapidly developing crises.

Doctrinal compatibility

At this time, French Navy and U.S. Navy doctrine is not sufficiently compatible to allow the two navies to quickly form an integrated battle group. The two navies should consider developing doctrine and procedures to support combined operations.

National and higher-level issues

Many issues relating to interoperability, such as rules of engagement (ROE), are national, rather than naval, issues. Interoperability amidst a contingency operation could be improved if the two navies could predetermine issues critical to naval integration and identify approaches that could speed or otherwise facilitate integrated operations during a contingency.

Introduction

From 14 to 17 May 1996, U.S. Navy (USN) and French Navy (FN) officers conducted OBJECTIVE ALLIANCE 96 at the Naval War College in Newport, Rhode Island. The Director, Strategy and Policy Division (N51) of the Office of the Chief of Naval Operations (CNO) and the état-major de la marine (EMM)¹ sponsored the seminar game. OBJECTIVE ALLIANCE 96 examined interoperability issues between the two navies at the operational and tactical levels in the 2005 period. The game focused on identifying requirements to achieve full operational and tactical integration. Earlier games examined operations at other levels of integration (as identified in the various French-U.S. standard operating procedures (FRUSSOPs)). Appendix A provides a review of the last French-U.S. Navy war game (1994) and reviews the FRUSSOPs interoperability levels.

In essence, OBJECTIVE ALLIANCE 96 sought to identify existing or emerging obstacles to full integration of U.S. and French Navy battle groups in the year 2005. Searching for such obstacles now will allow the two navies time to find solutions to these problems in the intervening decade.

Although OBJECTIVE ALLIANCE 96 sought to explore FN-USN interoperability issues, this game is not the only venue for examining these issues. Besides the real-world, day-to-day activities of the fleets, the two navies set up two interoperability working groups on the basis of the 1994 bilateral war game. These two groups, focusing on air operations and command, control, communications, computers, and intelligence (C4I), present recommendations at FN-USN navy-to-navy staff talks.

1. The French naval staff.

This paper has six major sections:

- A definition of key terms and concepts
- A brief description of the purposes of OBJECTIVE ALLIANCE 96 and an overview of the game
- A review of game discussions and recommendations
- An example of a doctrinal issue with multiple interoperability implications
- A comparison of the 1994 and 1996 FN-USN seminar games
- A set of analytical judgments and issues derived from OBJECTIVE ALLIANCE 96.

N51 requested that the Center for Naval Analyses (CNA) support OBJECTIVE ALLIANCE 96 as part of the CNA Scientific Analyst work for N51. This research memorandum is the result of the author's participation and observations during OBJECTIVE ALLIANCE 96 and his conversations with game participants. This paper does not attempt to fully recount game play, nor does it discuss all the issues exposed during game play in the four game cells.

Defining key terms and concepts

Interoperability and integration of military forces rely on several factors. These range from long-lead-time technical and training issues to the political situation encountered at a specific time. In brief, to achieve integration (the highest form of interoperability), forces must have compatible doctrine, procedures, and equipment. As used in this report, these terms have the following basic meanings:

- **Doctrine:** General concepts of how to do things or how to organize
- **Procedures:** Specific techniques or methods for carrying out tasks
- **Equipment:** Technical compatibility across hardware and software necessary for force integration.

In addition to broad-ranging compatibility, training is required to move from compatibility to interoperability. These factors may be in an interactive cycle; doctrinal developments may lead to changed standard operating procedures (SOPs) that require, for example, equipment acquisition (such as new software to support a new message type). In testing these concepts and technical changes in training evolutions (whether seminar games, classroom activity, or exercises), issues that may emerge that will lead to a review or revision of some element of the doctrine, procedure, or equipment. In theory, the cycle should always begin with strategic concepts leading to doctrine that would drive technical developments. In practice, however, this is not always the case; the cycle can start with any one of these areas.

The two navies can focus attention across each or all of these areas: doctrine, procedures, equipment, and training, thereby improving interoperability in a short-notice contingency situation in the 2005 era such as the one presented in the OBJECTIVE ALLIANCE 96

game scenario. This paper discusses specific issues that may be deserving of such attention.

OBJECTIVE ALLIANCE 96: An overview

OBJECTIVE ALLIANCE 96 brought together 29 French Navy and U.S. Navy officers from both headquarters staffs and the operating forces.² Many of the officers had extensive experience operating together; experience gained, for example, when the French and U.S. Navy carriers operated together in the Adriatic in fall 1995.

The French Navy's objectives for the game were as follows:

"To evaluate the capability of the French and American air-naval forces to jointly conduct a power projection mission in the context of a regional crisis resolution in the year 2005 time frame."

and, "... more precisely, to identify the similarities and the deficiencies affecting interoperability in the following areas: C4I, air defense at sea, and air operations of aircraft carriers...."³

2. This number does not include the USNR translators, and officers and civilian personnel from the U.S. Naval War College who acted as seminar facilitators, organized the seminar game, and handled game administration (and other support). A list of game participants is provided in appendix C. The author, an analyst from the Center for Naval Analyses, was also present. See appendix C for a list of OBJECTIVE ALLIANCE 96 participants.
3. Annex to letter no. 176, L'amiral Lefebvre, chef d'état-major de la marine, "Jeu de guerre franco-américain en 1996," DEF/EMM/EMPL/CD, 15 mars 1996. See appendix A for a description of game objectives as described in conversations by French officers during OBJECTIVE ALLIANCE 96.

In this vein, the “specific game objectives” that greeted the players in Newport were as follows:

- Develop greater understanding of fleet interoperability concerns in the 2005 time frame
- Examine the functions and organizational relationships between wartime commanders in a Combined Joint Task Force (CJTF) environment, specifically in the areas of C4I, Air Operations, and Air Defense at Sea.
- Identify other issues requiring examination and development
- Propose recommended solutions and alternatives.

In his opening comments, RADM Luecke (N51) directed the players to identify obstacles and difficulties preventing “seamless interoperability at short notice.” CA⁴ Celeria (CTF-470) commented that the FN, USN, and other navies are currently operating successfully at interoperability level 4 and have successfully worked together in the Adriatic, but that only a long workup time made this interoperability possible. The task for the week was thus to help identify work needed to be done for the two navies to operate together as a combined battle group.

The game was organized into four cells (a flag cell and three “syndicates”) responsible for responding over a 3-day period to situations created by a three-move game scenario. The three syndicates were Air Defense at Sea, Air Operations, and C4I.

Each day (14 to 16 May), the control team provided the players with a situation for developing a response. The scenario progressed through the seminar as the control team integrated the syndicate work into the scenario to create a new situation (of higher intensity).

4. French Navy rank abbreviations and their USN equivalents are as follows: CA, contre amiral, rear admiral (upper half); CV, capitaine de vaisseau, captain; CF, capitaine du frégate, commander; CC, capitaine de courvette, lieutenant commander.

The OBJECTIVE ALLIANCE 96 scenario involved a fictitious Mediterranean nation threatening (including actual use of armed force) one of its neighbors on land and sea.⁵ U.S. and French (“Blue”) forces included an aircraft carrier battle group (CVBG) from each navy, the USN Mediterranean Amphibious Ready Group (MARG), and limited shore-based support aircraft (FN/USN patrol, Airborne Warning and Control System (AWACS), refueling, and intelligence support aircraft). The victim state’s (“Green”) forces were weak and outmatched by the aggressor’s (“Orange”) forces. Orange forces included numerous naval assets and a large air force, providing a serious mid-level threat against Blue forces.

The first day’s scenario required the players to develop a combined naval deterrent posture that would discourage further aggression, reinforce diplomatic efforts to solve the crisis, and provide the forces a suitable posture for force protection while allowing enough flexibility to respond to national tasking (including contingency tasking to protect French citizens in both Green and Orange). In this phase, the players had to determine how to bring the two battle groups together, and best position Blue forces to support their shared political objectives.

For this move, the players focused on issues such as C2 organization for a combined task force (particularly, whether to have a Joint Task Force (JTF), whether to have a Joint Forces Air Component Commander (JFACC), and where to locate them). Other issues included: whether to combine the forces operationally and geographically or to operate in a coordinated fashion while remaining geographically separated; whether adequate and appropriate capabilities existed across the forces for C2 (e.g., whether communications systems could interact); and where to locate the forces.

Unlike the 1994 game (discussed in appendix A), OBJECTIVE ALLIANCE 96 did not attempt to move the players through the various interoperability levels outlined in the FRUSSOPs Mediterranean. By flag direction, the game focused on determining the requirements to

5. Scenario specifics are classified. The scenario served to foster discussion and specifics are not critical to understanding the following discussion.

progress immediately to “level 5”—full combined and interoperable forces.

The second move presented players with a political requirement to prepare for strikes on Orange forces in disputed areas and, potentially, deep into Orange territory. This tasking was the product of an increasingly tense political environment, as the United Nations (UN) placed an ultimatum on Orange to end hostilities and return to the status quo ante. Militarily, Orange forces began to play a cat-and-mouse game with Blue forces.

The third move laid the foundation for Blue strike operations, as the control team had Orange aircraft attack Blue forces at sea as the deadline for withdrawal approached. The players then focused on how to optimally structure a combined strike, and how to conduct battle-damage assessment (BDA).

With its operational-tactical focus, OBJECTIVE ALLIANCE 96 purposely did not examine some difficult interoperability issues. The political agreement for a combined task force, with common C2 (if not C4I), was assumed. Other difficult issues, such as determining and coordinating rules of engagement (ROE) and establishing procedures for expediting the sharing of national intelligence, were only briefly discussed.

A review of game discussions

Through the three game moves, a wide range of interoperability issues emerged. The game task was to determine what was required to move toward full integration of the FN and USN CVBGs. This section provides an overview of the issues uncovered by each move (and, therefore, each day). Discussion focuses on Move 1 because many of the issues raised during the first day turned out to be themes throughout the week.

Move 1: Issues and discussions

The first day's move gave the players the challenge of integrating the French CVBG, and the U.S. CVBG and MARG into a combined task force in just several days. At the same time, they had to position the forces to support the political objectives and prepare for combat operations.

In terms of force positioning, players assigned the two aircraft carriers (CVs) separate operating areas, but mixed the escorts of the two CVBGs to provide the strongest combined defensive posture, using the strengths of each unit as appropriate. The players did not want to involve MARG (with its embarked Marine Expeditionary Unit (MEU)) in any serious fashion, therefore they sent it as far from the operational area as possible.⁶

Several subjects dominated discussions. Two key items were command and control—how to organize the battle group—and, as a subset of overall C2 discussion, whether to form a JFACC or similar air control organization.

6. This choice reflects the mix of players at the game and their impression of mission tasking. Players did not focus extensively on the tasking to “protect French citizens in Green and Orange.”

On many C2 issues, the FN and USN contingents had essentially no disagreements. The syndicates and flag cell quickly agreed to organize the battle group along the composite warfare commander (CWC) concept. The players also rapidly agreed that the senior French *amiral* would act as the deputy Combined Joint Task Force (CJTF) commander.

In terms of C2, other than JFACC, questions dominating discussion included:

- Which is the appropriate level for commander of the operation (Sixth Fleet or CTF-60 level)?
- What French personnel augmentation is required for the CJTF staff?
- Who should hold which billets (and where should CWC functions be assigned)?

Figures 1 and 2 provide two alternative C2 structures proposed by the "Air Defense at Sea" syndicate. Figure 3 provides the C2 structure then created by the control group and approved by the flag officers. The differences between these three structures provide a sampling of some of the issues discussed. The first, for example, does not have an independent JFACC and has two direct deputies to CJTF commander (the land component commander (LCC) (the MEU commander) and the maritime component commander (MCC)). The second option grafts an air component commander (ACC) onto the previous structure with JFACC responsibilities. The third command structure collocates the JFACC with the CJTF aboard *LaSalle* and has three subordinates to the CJTF (CTF-60, the MARG, and an Underway Replenishment Group (URG) of both USN and FN supply ships).

Figure 1. Air Defense at Sea syndicate's recommended C2 chart

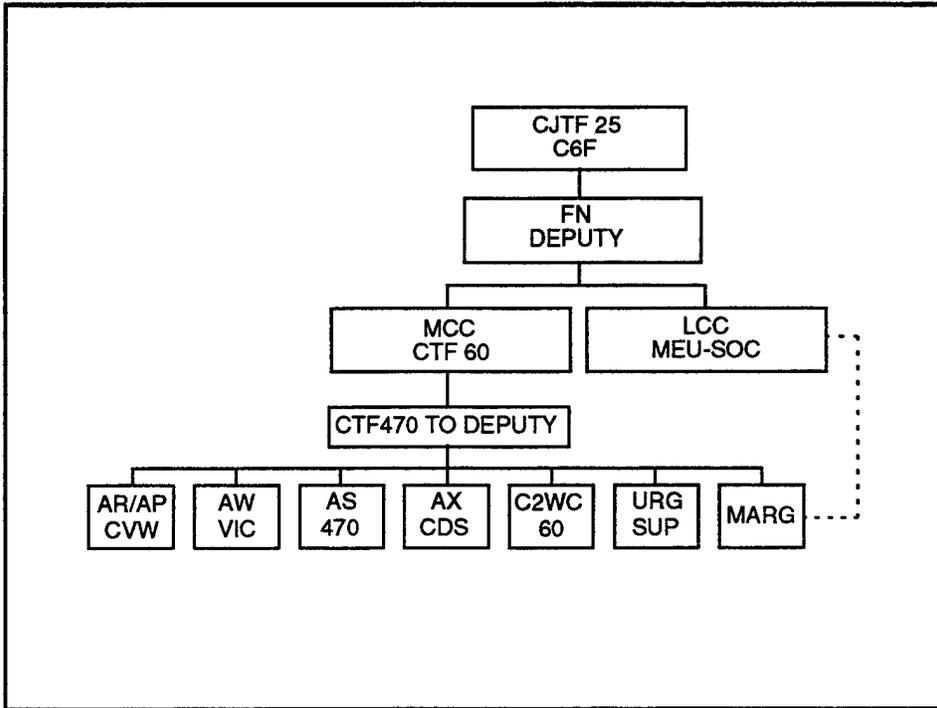


Figure 2. A proposed alternative C2 structure

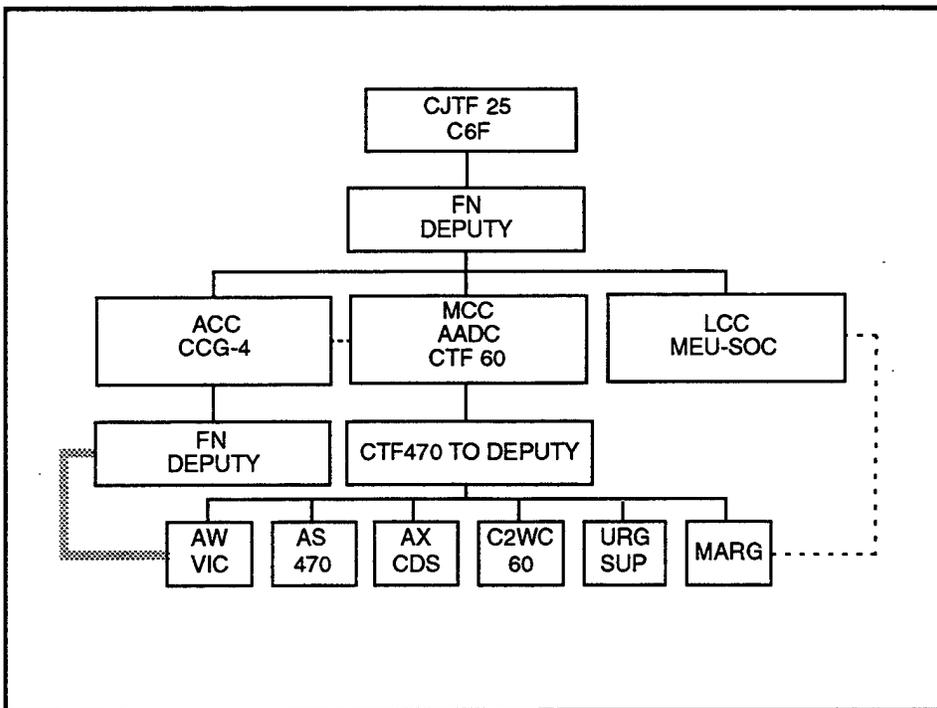


Figure 3. Final C2 structure

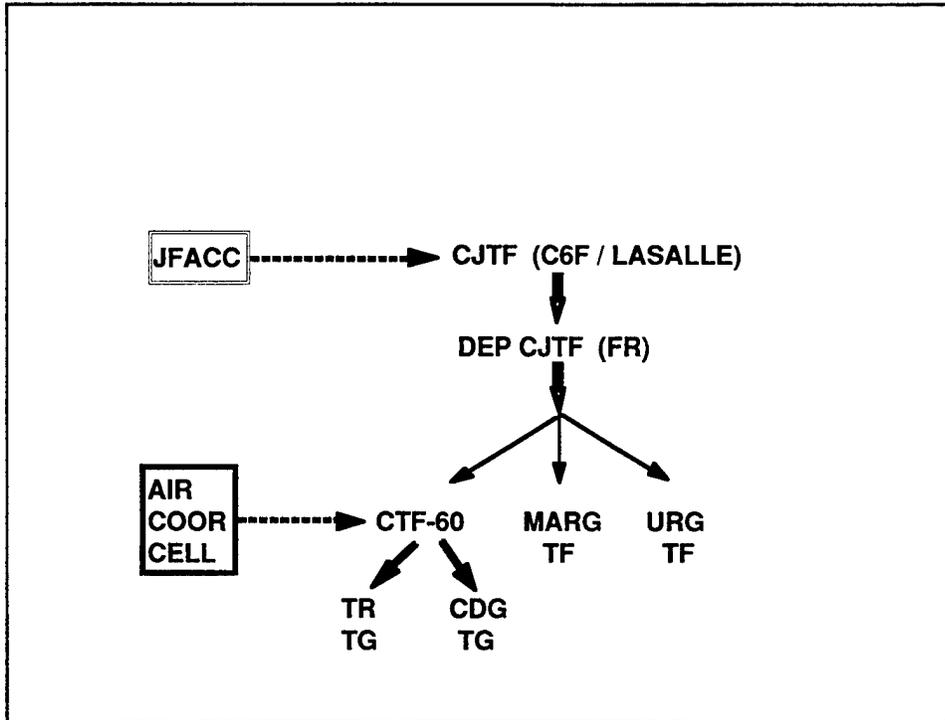


Table 1 presents the Air Defense at Sea syndicate's examination of what C2 functions must be collocated for effective operations and which functions do not require collocation.

Table 1. Required and non-mandatory collocated C2 functions

Collocation non-mandatory	Collocation important
AAW	Air Operations Center (AOC)
ASW	AOC products (ATO, ATM, SPINS, Airspace Control)
ASUW	CSAR
HEC	Intelligence/Battle Damage Assessment/Targeting

The issue of whether to have and, if so, where to house a JFACC proved the most contentious issue during the first session. As part of the discussion, the French officers questioned whether this operation would even require a JFACC since total air operations would involve no more than 200 to 250 sorties a day (maximum) and almost all of those would be generated off the aircraft carriers.

FN officers pointed to the MACC as a suitable approach to the air coordination and control. At the time of game play, there was a MACC functioning in the Adriatic in support of operations in and around the former Republic of Yugoslavia.

USN officers promoted the on-scene carrier group staff to serve as the core element for a JFACC-afloat. The staffing for a formal JFACC afloat was cited as about 150 personnel. The FN (and many USN) officers argued that this was too large an organization for so few sorties. RADM Luecke stated that the JFACC-afloat's size can vary with the size of the operation but that the functions would not change.

In other discussions, the C4I cell proposed communications connectivity between the two navies. Figure 4 displays the basic communications connectivity. As can be seen, game play assumed that the CJTF commander would report both to Commander in Chief (CINC), U.S. Navy, Europe, and the French Commandant en Chef, Mediterranean.⁷ Figure 5 displays the communications links between the FN and USN circa 2005. A key item is that there will be two satellite links between the two navies through which the French aircraft carrier and French fleet commander will link with USN forces. Figures 6 and 7 provide different perspectives on this same critical point.

7. Current U.S. C2 doctrine places a JTF commander in a direct link with the regional CINC. Thus, following U.S. doctrine in this case, CNE would not be part of the operational command and control chain if the Sixth Fleet commander were the CJTF commander.

Figure 4. Basic communications architecture

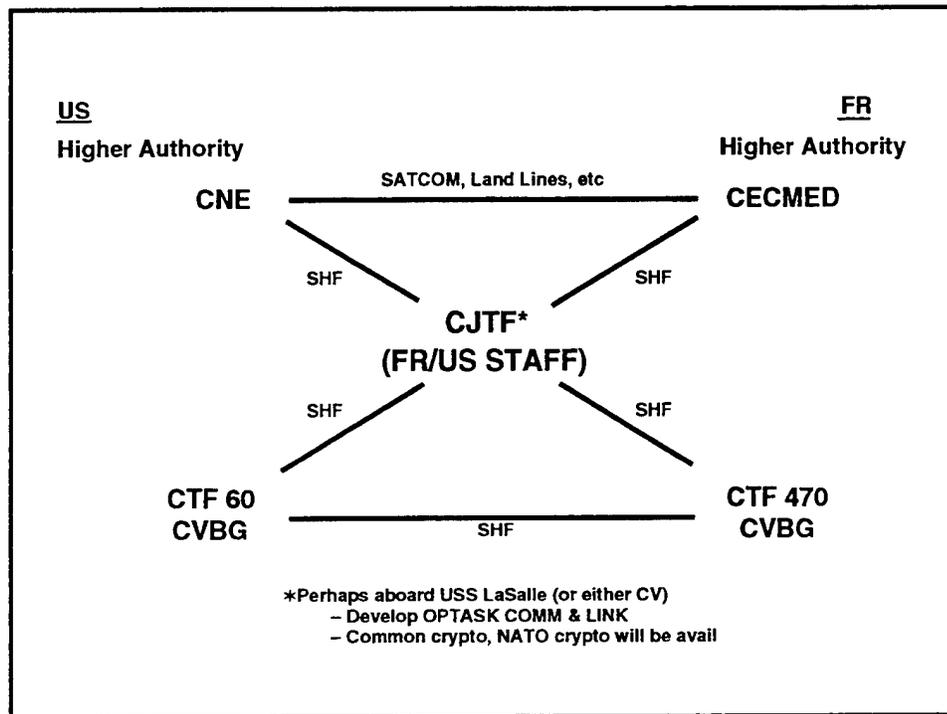


Figure 5. Communications links for a combined FN-USN operation circa 2005

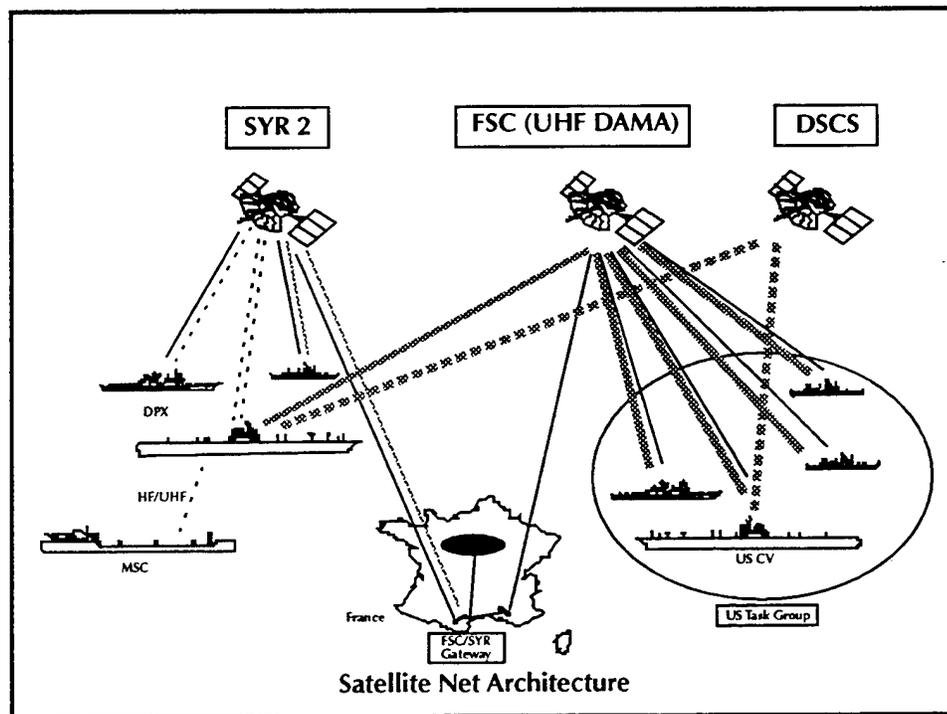


Figure 6. FLEETSATCOM connectivity

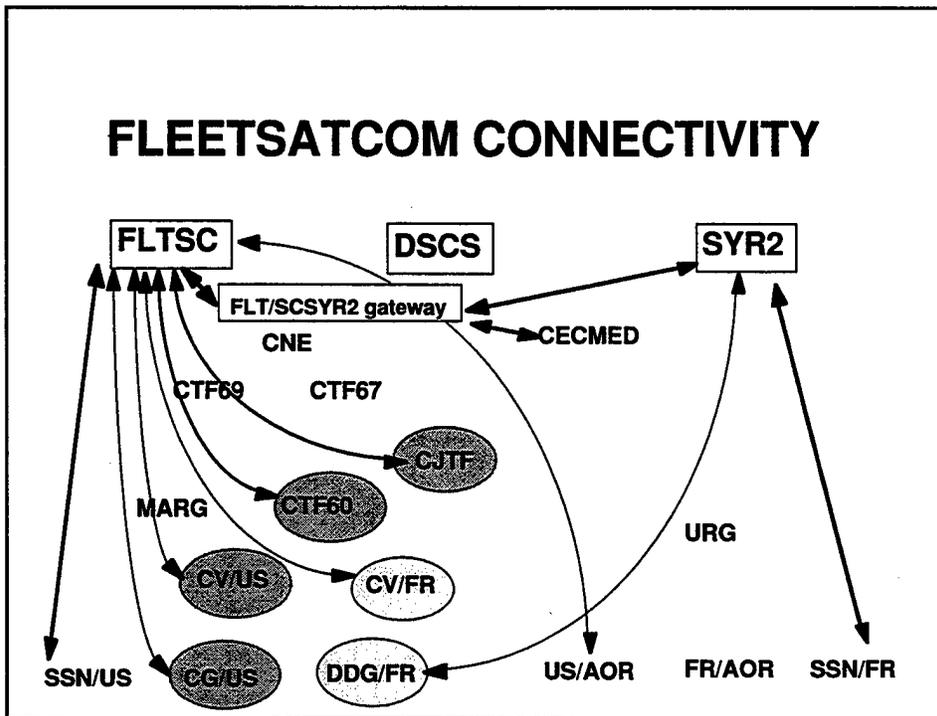
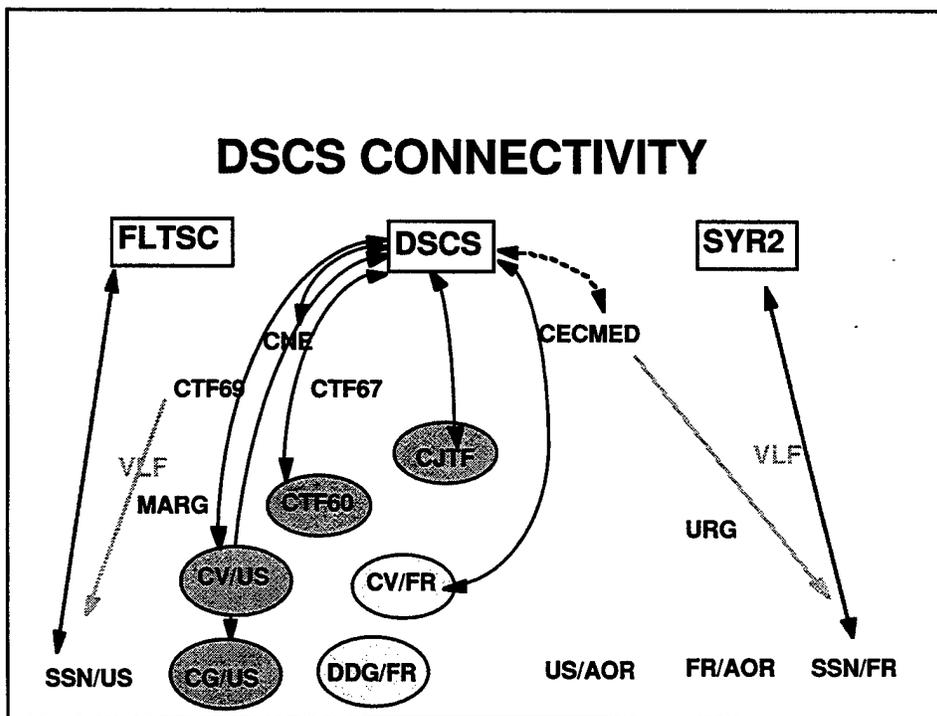


Figure 7. DSCS connectivity



Among the benefits players saw through integrating the force was the ability to share the burden of maintaining combat air patrols. Through this burden-sharing, neither carrier would have to surge to 24-hour-a-day operations during a period of presence operations.

Players also discussed how to handle the C2 for the FN and USN submarines committed to the operation. Tasking and prioritization of maritime patrol aircraft missions also were discussed, particularly the tradeoff between ASW and ASUW missions. A related issue that arose during discussion was the potential for problems of operating fixed-wing aircraft in support of a bilateral operation from third countries.⁸

As part of the first day's discussions, all groups raised issues of how to integrate the forces in a rapidly developing contingency situation like that postulated for OBJECTIVE ALLIANCE 96. A key factor identified for expediting such interoperability was the ability to rapidly identify and transfer liaison officers between the two task forces.

Move 2: Issues and discussions

With increasing tensions as Orange forces did not retreat from their aggression, the OBJECTIVE ALLIANCE 96 players were tasked with focusing on the following three issues during the second move:

- Identifying interoperability problems
- Determining the JFACC who/what/where
- Collecting and distributing intelligence.

In discussions throughout the second day, the players examined these issues, revisited day-one issues, and otherwise expanded the discussion.

8. For an examination of limitations on U.S. land-based airpower in contingency operations, including denial of base use, see CNA Miscellaneous Paper 178, *Basing and Other Constraints on Land-Based Aviation Contributions to U.S. Contingency Operations*, by Adam B. Siegel, March 1995.

During Move 2, the Air Operations syndicate, in particular, examined how many liaison officers would be needed to conduct such an operation. Their list totaled 37 FN officers, including a 5-officer group to the CJTF (including a French Admiral as deputy commander) and 24 officers to the JFACC. The French officers believed that it would be difficult—if not impossible—for the FN to supply this large a number of qualified officers for liaison positions during a contingency operation (especially one conducted on short notice). There is, however, a core French command staff potentially available for deploying to contingency operations. The TF-470 staff is split into two rotations, with only half deploying with the aircraft carrier battle group. The part of the staff remaining in Toulon could deploy (in whole or in part) to work in the CJTF staff.

Move 3: Issues and discussions

The next move of the game involved a scripted War At Sea strike against the combined task force. Although Blue forces shot down all of the Orange aircraft, the Orange strike package was allowed to sink one USN escort ship. In reaction to this, the OBJECTIVE ALLIANCE 96 players were tasked with preparing a strike package against Orange targets at sea and ashore (to include battle damage assessment from these strikes) and to review the defensive posture at sea, in light of impending escalation of hostilities.

Critical items during the second day's discussions included identifying the proper set of targets for a strike; whether (and where) to reposition the force in a post-strike environment; how to improve the force's defensive posture; and how to conduct BDA.

Both the U.S. and French navies strongly promoted several face-to-face meetings and briefings between aviators before strike operations were conducted. The E-2 mission commander, strike commander, and fighter commander desired to meet before the strike. Such briefings were desired about 2 hours before the strike, and could be accomplished face-to-face or via video-teleconferencing (VTC).

The Air Operations syndicate evaluated the benefits of different levels of integration for strike operations. Table 2 summarizes this discussion. The discussion favored coordinated rather than combined strikes.

Table 2. Integration type and strike warfare

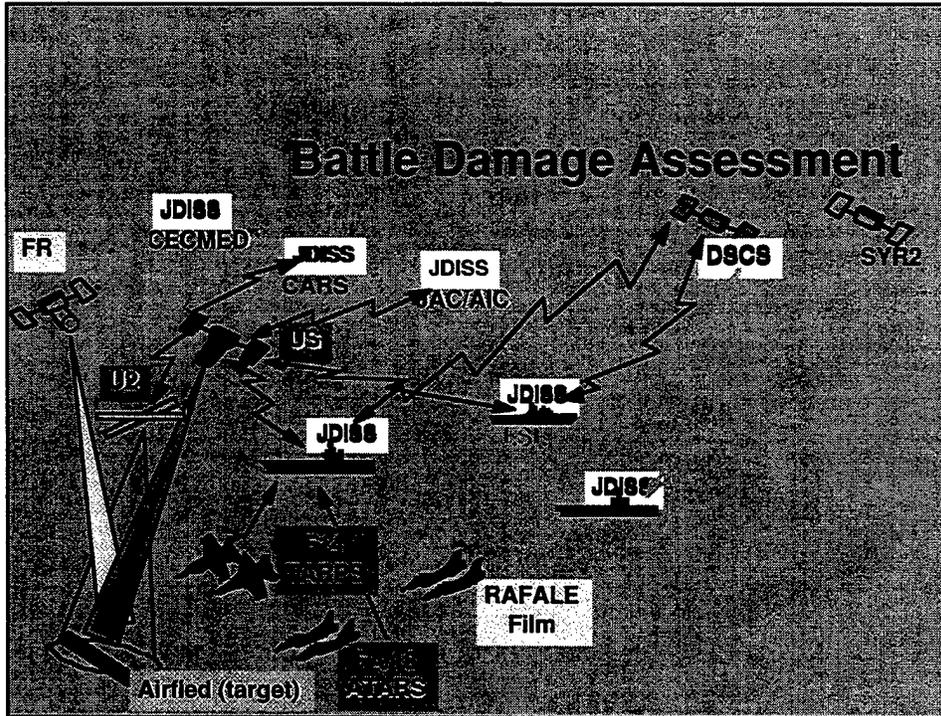
Planning	Separated	Combined	Coordinated
Political aims	Not as good	Good	Good
Tasking	Easy	Difficult	Less difficult
Time management	Easy	Difficult	Less difficult
Assets synergy	Not as good	Good	Better
Tactical preparation (TAMPS)	Easy	Difficult	Easy

In terms of BDA, the discussion examined a wide range of questions. These included:

- How can national intelligence assets and information be integrated with the need to conduct combined BDA?
- What organic and nonorganic assets exist for BDA?
- What complementary BDA capabilities will exist? Is there a potential for coordinating French and U.S. national technical methods of intelligence collection to provide a more robust picture than either side could achieve alone?
- What standoff collection capabilities exist to support BDA?

Figure 8 displays the means and methods available for collecting and then distributing information for BDA. Connectivity via the Defense Satellite Communications System (DSCS) is critical for the timely transfer of imagery. In part to support BDA, a Joint Strike Analysis Center (JSAC) would exist aboard the U.S. CVN. In this scenario, it would include 21 officers—12 USN and 9 FN.

Figure 8. Post-strike battle damage assessment



OBJECTIVE ALLIANCE 96 syndicate recommendations

This section provides a brief overview of syndicate conclusions and recommendations. Most of these were taken from the concluding briefs and others were derived from the game's discussions and game play.

C4I

Satellite communications (SATCOM) are the key to C4I connectivity for the joint and allied warfighter. No single SATCOM system can or will satisfy all maritime C4I requirements. The CU2 "universal" MODEM (US, UK, FR effort), which is scheduled for fleet installation in the 2000-2001 period, is critical for successful SATCOM C4 connectivity.

Just one U.S. WSC-3 satellite link is built into *Charles de Gaulle*. Therefore, in a combined operation, this will require a choice between linking into the U.S. or the French SATCOM systems.

The French Syracuse systems can exchange voice and data with U.S. systems via a gateway. The compatibility and existence of this gateway needs to be ensured.

For the tactical communications, LINK 16 will be common to both navies and available on most platforms. Non-LINK 16 platforms will have LINK 11 for connectivity. The implications of connectivity problems with non-LINK 16 ships and perhaps CEC ships remain unresolved issues.

The compatibility of communications systems and methods needs to be frequently verified with the introduction of new elements in both navies. For example, JDISS/LOCE transmission interoperability

needs to be practiced and proved. To support BDA, interoperability of image transmission should also be verified.

Intelligence

Intelligence support is critical for combined operations, but releasability can be a problem. The French, in particular, need to develop better concepts of what and what is not releasable to allied partners. The United States is currently developing rule sets to facilitate intelligence sharing at the fleet-CINC level.

In peacetime and during non-crisis periods, both navies need to identify impediments to release in order to ease the process when necessary. Circumstances will determine releasability rules, and without a higher-level decision to share relevant information, the two forces will not be able to share data. Such a political decision on information flow must occur before the operation, so that special intelligence sharing will prove timely and militarily effective.

Air defense at sea

A command organization that optimizes the strengths of the two navies should be decided in peacetime, so that in a contingency operation an effective command structure can be put into place rapidly. As discussed, level 4 (or level 5) interoperability will probably require combined staffs.

The French Navy and U.S. Navy have different concepts about the concept and utility of a maritime exclusion zone (MEZ). This, in part, reflects different national concepts, but the optimum role of a MEZ in a combined operation should be further explored. According to OBJECTIVE ALLIANCE 96 participants, the French have never implemented this concept.

A FRUSSOP for joint engagement zones (JEZ) should also be developed, validated, and published. LINK 16 and CEC make a JEZ a realistic possibility and a JEZ is the best for littoral operations, where future crises are most likely to occur.

Air operations

The U.S. Navy must continue to familiarize the French Navy with JFACC concepts and procedures of particular value. The USN should invite the FN to observe JFACC-afloat operations.

Once *Charles de Gaulle* becomes operational, the two navies need to develop and exercise aircraft crossdeck operations with the C-2, Rafale, F-18, and E-2 as the basic set of aircraft that should be cross-qualified and certified on the other navy's aircraft carrier(s).

The French Navy should establish an operational requirement for Contingency Theater Automated Planning System (CTAPS) incorporation into the French JMCIS system. CTAPS is critical for aviation planning under a JFACC and in joint operations. It is the means by which a large ATO can be most efficiently transmitted. (Currently, in the Adriatic, the FN carrier receives FN air taskings via message traffic.)

Standardizing the Tactical Air Mission Planning System (TAMPS) and SLPRM aviation planning systems will also facilitate aviation interoperability. Without such standardization, the ability to cross-plan between the FN and USN air wings will be limited. TAMPS/SLPRM system compatibility will allow both sides to better understand the other's aviation capabilities in the event of contingency operations.

The two navies need to create a set of standard operating procedures related to combined aviation operations—ranging from C2 (SOP for forming a combined FACC) to tactical (such as adding OPTASK Strikes to the FRUSSOPs). As well, the two navies should standardize tactics and document this standardization (in TACNOTES). As this develops, these tactics and SOPs (such as for an air component commander/air component coordinator) should be exercised within existing combined USN/FN exercises (such as Iles d'Or). For the FRUSSOPs, an OPTASK Strike needs to be developed with, as one aim, standardization of the strike packages.

A decade from now, the USN will continue to have certain types of assets that the FN will not have. These will include the EA6B, ES-3, UAVs, and other SEAD assets and capabilities. Managing these

unique assets will require prioritization of mission requirements across the combined task force.

General

Manning issues will be critical for creating a Combined Joint Task Force (CJTF). These requirements go beyond JFACC alone. To be able to form an effective CJTF on short notice, the staff will have to be identified and trained in the non-crisis period for effective melding in the event of a combined contingency operation. Liaison officers are critical for interoperability. Unless it is a long-developing crisis, they need to be identified, trained, and exercised well beforehand. Such officers could be designated for fly-away augmentation teams on both sides (especially for command and control; such as for the CJTF and the CJFACC).

Rules of engagement (ROE) need to be agreed on before combined operations can occur.

Public affairs should be coordinated, with a common policy.

The two navies need to establish SOPs across the spectrum of potential operations. As the degree of integration goes up, so does the required level of standardization. The two navies need to agree on OPTASKs for inclusion in FRUSSOPs.

Both nations need to verify interoperability of new systems as early in the process as possible. Imagery, for example, must be verified regarding the interoperability of transmission between units via the JDISS and LOCE systems.

Improved face-to-face briefing capabilities will, as discussed, aid combined strikes by allowing shared pre-mission briefings for air units. Video-teleconferencing (VTC) facilities aboard ship—which should be available on *Charles de Gaulle* and all USN CVs in 2005—will provide this capability.

JFACC: An example of the need for doctrinal compatibility development

At this time, neither navy has sufficient definition or understanding of doctrine to allow the two navies to quickly form an integrated battle group. For example, neither the French nor the U.S. contingent clearly agreed on JFACC-related issues. Disagreements (or lack of understanding) ranged from what a JFACC should do to whether such an organization is even required (for a maritime-dominated operation). As the material in table 3 suggests, a broad range of interoperability issues derive from JFACC and have important implications.

JFACC is an area of particular flux in doctrine at this moment, with the exact roles and relationships of JFACC, JFACC-afloat, and MACC still being clarified within the U.S. military—and even less mature in a multinational context.⁹ This flux is, in and of itself, a sign of potential problems in integrating two different battle groups for combined operations.

A complete JFACC would, in theory, require about 40–45 French Navy officers to be assigned. According to the French officers at OBJECTIVE ALLIANCE 96, this would over task the FN and it is unlikely that the FN could provide that many officers (at least not with requisite training and experience).

9. For a useful discussion of interservice JFACC issues, see: CNA Research Memorandum 92–195, *The Joint Force Air Component Commander: Theory and Practice*, by Maureen A. Wigge, March 1993. Although somewhat dated because of the rapid change in this doctrinal arena, the author believes this study remains the clearest discussion of JFACC issues. See also: CNA Report 202, *The Navy and JFACC: Making Them Work Together*, by Peter P. Perla et al., April 1993.

Table 3. Some JFACC interoperability issues

Area	Some issues	Some implications
Doctrine	What are JFACC roles and responsibilities? What are JFACC-afloat roles and responsibilities? Does a sea-based JFACC differ in its roles and capabilities from a land-based JFACC? If so, in what ways? Is a MACC a suitable alternative for JFACC (or JFACC-afloat) or is it only a sub-JFACC organization?	Doctrine should be developed and agreed on by the two navies.
Procedures	What personnel (with what training) are required to man JFACCs? What are the procedures for progressing from national to coalition control?	To effectively participate in air operations planning and C2 during a combined operation, the FN should identify, train, and educate personnel for CJFACC operations.
Technical	Do both the U.S. and French Navies have the capabilities to plan missions for both force's aviation? Is the tactical planning system under development for the Rafale compatible with TAMPS? Or, more generally, are USN and FN planning systems compatible? Will <i>Charles de Gaulle</i> have CTAPS access? What computing requirements exist to support FN JFACC augmentees? Do computing programs or equipment have to be developed to facilitate FN integration into a JFACC?	The French Navy should ensure that the Rafale planning system is compatible with TAMPS to allow integrated mission planning.
Training	How should be FN augmentees be trained to support a CJFACC?	The two navies should conduct combined training in JFACC.

Comparing OBJECTIVE ALLIANCE 96 with the 1994 FRUS war game

Appendix A provides a review and analysis of the 1994 FRUS war game held in Toulon, France. Although different analysts supported the two games, a number of significant points seem to emerge from comparing the two:

- More than in 1994, in 1996 French players had an excellent understanding of USN doctrine and were clearly willing to adopt the USN CWC structure as the basic model for organizing the forces. The key doctrinal issue left to be resolved was primarily the role for a JFACC (or JFACC-afloat or MACC) in the contingency, and where should it be located.
- If level 4 interoperability was a “thought experiment” in 1994, this was central to OBJECTIVE ALLIANCE 96. OBJECTIVE ALLIANCE’s thought experiment was to examine what was required to take the forces to level 5.
- Both games succeeded in part because game play was placed outside the political arena. In 1994, players were asked to look beyond the political issues as the forces sequentially moved into higher interoperability levels. In 1996, the scenario assumed French-U.S. political agreement on goals, objectives, and general military options before any force movement. Although this allowed the players to focus on tactical/operational and technical issues, potentially important strategic-level issues were excluded from consideration.
- Unlike 1994, OBJECTIVE ALLIANCE 96 participants clearly recognized the need for doctrinal and procedural compatibility in addition to technical compatibility, as necessary for interoperability. All groups at OBJECTIVE ALLIANCE 96 discussed some form of doctrinal interoperability during the game

(whether ROE, communications format, BDA procedures, or JFACC concepts depended on the group).

- OBJECTIVE ALLIANCE 96 focused less on intelligence than the 1994 game— for example, there was little if any discussion of the JIC's role.
- In 1994, scenario discussion dominated the game play. In contrast, OBJECTIVE ALLIANCE 96 discussions were rarely constrained by the scenario. In 1996, the scenario successfully acted as a tool for discussion.

OBJECTIVE ALLIANCE 96: Analytical judgments

The following are some of the analytical judgments derived from OBJECTIVE ALLIANCE 96. Some of these are taken directly from game play or conversations at the game; others are analytical judgments based on the seminar game.

What is the target integration level?

The FRUSSOPs were progressing through five different interoperability levels (from no integration (level 0) to combined operations (level 4). OBJECTIVE ALLIANCE 96 tackled the challenge of moving to level 5 or integrated operations. Taken to the extreme, this interoperability level would require the ability to fly FN and USN aircraft in mixed sections. Although briefly discussed, level 5 was quickly dismissed by game players as unachievable because of the likely training burden. This highest level of integration—defined as an ability to fly aircraft in mixed sections—is likely to be unachievable, at least not at an affordable cost (especially in training requirements). Thus, it was agreed that the two navies' objective would not be a "seamless" integration, but achieving the most effective operations possible. In this context, integration would seem to require shared C4I (to the extent possible); common rules of engagement; compatible doctrine, procedures, technology; and trained personnel for liaison and other key positions for integrating the two national forces. The aim of such integration is to be able to use forces for maximum effect in a common effort.

As the two flag officers commented toward the end of the week:

"Our goal is not to work exactly alike at the same level. If our goal was to do that, the best way to achieve that would be to buy an American aircraft carrier and to hire an American crew."¹⁰

10. CA Celeria, 17 May 1996.

and, "Closely coordinated is the level of cooperation and integration that we can aim for. We are aiming for close coordination to achieve maximum effect."¹¹

A task for future discussion is to limit interoperability so that the cost (whether in equipment acquisition, doctrinal and procedural development, training time and money, or in political capital) does not exceed the benefit. For example, crossdeck training for Rafale aircraft on USN CVs will ease any emergency landing requirements and will provide some deck flexibility for a combined task force. On the other hand, providing USN CVWs with a full suite of Rafale repair parts and equipment would provide only a minor return on a major investment.

Closing the technology gap

According to the French participants in OBJECTIVE ALLIANCE (as stated several times during the week), the French Navy felt that it had fallen behind the U.S. Navy technologically, as was demonstrated during OPERATION DESERT STORM. This technological gap greatly restricted the ability of the two navies to operate together. The French learned in the Gulf War that it would have to invest in technology to achieve interoperability with USN forces. It is now seeking to reduce this technology gap by commissioning the new French aircraft carrier, *Charles de Gaulle*, in the coming decade. Most of the OBJECTIVE ALLIANCE participants believed that it was possible to avoid a technological gap, and agreed that the hurdles to successful integration did not seem insurmountable (and, in most cases, steps are already underway to tackle these challenges).

Expanding communications requirements

In recent years, both the French Navy and the U.S. Navy have greatly expanded communications capabilities at sea with, for example, the growing availability of POTS, STU IIIs, and VTC afloat. The coming years will also see substantial growth in communications capability with a greatly expanded "pipeline" for communications. Much of the

11. RADM Luecke, 17 May 1996.

expanded communications requirements will be the result of transmission of intelligence products. With these growing requirements, the problems encountered with ATO transmission during DESERT STORM are largely unlikely today and will be totally unthinkable in 2005. Just as communications capabilities are not static, neither are communications (and computing) requirements. The discussions during OBJECTIVE ALLIANCE 96 did not, however, focus on how command, control, computer, and intelligence demands might grow and place different forms of pressure on communications capabilities.

In future U.S.-FN games, it might be prudent to ask whether there are communications needs identifiable that will grow in coming years, and thus expand the data flow to fill all of the increased capability being added to the fleet. For example, in the 1950s a pilot was satisfied with a target package with only one or two photos of a target, several sketchy black and white maps of the target route, and even sketchier information on air defenses around the target. Today, a pilot expects multiple photos of the target and the route, color maps, detailed information on threats, and digital information on the target, route, and potential threats. Will a pilot a decade from now expect all of this and even more, such as video information (whether from national assets or other means) of the target and the ingress/egress routes and enough digital information to fly simulated strikes before the actual mission? Transmission of this type of information, such as video of multiple targets, will almost certainly multiply the demand on communications capabilities.

Events such as OBJECTIVE ALLIANCE 96 are valuable in that they can help the two navies identify areas of growing demand on communications (and computing) capabilities that will affect their ability to operate together.

Burden-sharing interoperability development

A review of the issues and discussions of OBJECTIVE ALLIANCE 96 indicates that much of the challenge of achieving interoperability will lie with the French Navy. This is primarily a function of the stability of personnel (relative to U.S. personnel) as to who will be involved in

coalition operations. The same French staff (TF-470) will command the French CVBG in all coalition operations and, thus, there will be personnel continuity in TF-470 between one coalition operation and the next. The same cannot be said for the U.S. Navy.

Due to the structure and size of the French Navy, it is far more likely that the TF-470 staff and the French air wing will have had recent (and more extensive) experience working with U.S. Navy forces than the relevant USN staff and air wing(s) would with French forces.

For the JFACC, to provide one example, it may be wise for the French Navy to develop a cadre of officers (most likely associated with TF-470) trained in JFACC procedures and prepared to deploy to the JFACC in the event of a combined operation. These officers will need to be identified and trained before a contingency; so that the French Navy can deploy them on short notice to effectively represent FN interests and effectively communicate FN capabilities within the air planning process of a combined operation.

Moving from compatibility to interoperability

As discussed earlier, interoperability relies on compatible doctrine, procedures, and equipment. Training develops this compatibility into interoperability (with, in general, more training leading to greater interoperability). With a long lead time, or a slowly developing contingency, the already developed comparability can be built on during the contingency to achieve interoperability. This occurred in contingency operations such as the Persian Gulf,¹² Adriatic (from 1992 to 1996), drug-interdiction operations, and enforcing UN sanctions against Haiti.

During a short-notice contingency operation, such as that postulated for OBJECTIVE ALLIANCE 96, prior training will be required for the forces to operate effectively in a combined fashion.

12. Examples from the Persian Gulf include the interaction between USN and FN forces during the Iran-Iraq War (especially in 1987–1988, when the USN conducted OPERATION EARNEST WILL), and the now almost 6-year long maritime interception operations (MIO) against Iraq shipping enforcing UN sanctions against Iraq.

A choice of investment level exists. If the two navies develop compatibility, this compatibility could be built on during extended contingency operations to achieve interoperability. For effective operation as a combined force during a short-notice or quickly developing contingency, however, this training will have to take place before the contingency operation.

Doctrinal compatibility

With the real-world experience of Adriatic operations, French reintegration with NATO, and the growing interactions between the two navies, there seems to be increasing FN-USN doctrinal and procedural compatibility. Nevertheless, OBJECTIVE ALLIANCE 96 brought together officers with substantial recent experience operating with the other navy, and indicated further doctrinal development needs to be accomplished before a fully effective integrated force can be created on the short timeline called for in the scenario.

The need to develop compatible doctrine

At this time, neither Navy has sufficient mutual doctrine to allow the two navies to quickly form an integrated battle group. The following are two examples that came out during OBJECTIVE ALLIANCE 96 game play:

- **JFACC:** Neither the French nor the U.S. contingents agreed on several JFACC-related issues. Disagreements (or lack of understanding) ranged from what a JFACC should do to whether such an organization is even required (for a maritime-dominated operation).
- **C2:** Some discussion occurred over how best to structure the command relationships and share the burdens of command in the multinational force.¹³

13. Current U.S. C2 doctrine places a JTF commander in a direct link with the regional CINC. Thus, following U.S. doctrine in this case, CNE would not be part of the operational command and control chain if the SIXTH Fleet commander were the CJTF commander.

These examples suggest the two navies should develop doctrine to support combined operations. The ongoing Naval Doctrine Command efforts to establish a multinational naval doctrine¹⁴ and NATO doctrinal developments might provide the basis for dealing with this arena.

National and higher-level issues

No matter the extent of efforts within and between the French Navy and U.S. Navy, there are many issues that are not resolvable within the two Navy structures. For example, determining ROE and the timing of integration are likely to be national, rather than naval, decisions. Another such area is the need to understand the procedures (on both sides) for rapidly achieving full sharing of relevant intelligence information. OBJECTIVE ALLIANCE 96 did not cover issues outside the context of the navies more than briefly. A useful task for a future seminar game would be to identify issues critical to naval integration that lie outside the scope of naval forces and to identify approaches to these issues that could speed or otherwise facilitate integrated operations during a contingency. For example, the two nations might agree before an operation that the navies can provide defensive air cover (CAP) to each other's battle groups during contingency operations. Sending liaison officers who could transition to members of a CJTF staff could also be a step acceptable to the civilian leadership that would speed integration in a contingency operation.

Intelligence support compatibility

The French intelligence support and analysis is more centralized than the current U.S. structure. Information from French national technical means (NTM) can only be retrieved intermittently and is collected at a national-level intelligence analysis center. U.S. operational forces have more extensive access to raw intelligence and NTM;

14. See for example: *Multinational Maritime Operations (DRAFT)*, International Working Group, 13–17 May 1996, Naval Doctrine Command, 1540 Gilbert Street, Norfolk, NY, 23511–2785.

while a central analysis structure exists, tactical and operational units also have substantial analysis capabilities. The players discussed, but did not resolve, the questions of how to integrate the French and U.S. intelligence systems to provide a rapid combined intelligence support and BDA at the operational and tactical levels. A future seminar game could examine whether the different foci, structure, and philosophies of the two nations' intelligence services could be integrated to improve the ability of the two navies to effectively work together during a contingency operation.

Game design and organization

In addition to examining the game for interoperability issues and challenges, N51 requested concepts as to what changes might occur in future games to aid achievement of game objectives. OBJECTIVE ALLIANCE 96 achieved many of the objectives in no small part due to the selected personnel and game structure. Both contingents had individuals with experience operating with the other navy and there was a substantial spread of Navy technical and operational expertise present. The scenario facilitated discussion rather than becoming the center of focus. In terms of game design and structure, however, there seem to be several issues to be examined in developing future FRUS seminar games:

- Defense at sea: In future, for example, seminar games should include the full scope of defense at sea in all warfare areas, not solely air strike operations.¹⁵
- C4I participants should represent a broader range of the C4I community. The officers in the OBJECTIVE ALLIANCE 96 C4I cell seemed focused principally on communications

15. French officers used the term "above-the-water" warfare as a combination of U.S. concepts of AAW and ASUW. This term was used in discussions of ship equipment and capabilities, and in discussion of mission tasks. This terminology (above/below the water) is accepted NATO terminology.

capabilities and connectivity.¹⁶ In addition to including intelligence personnel in the game, splitting C4I into a technical and a doctrinal working group might be fruitful.

- Joint participation: While operations are more likely to be multinational in character, they are also more joint than in the past. The examined scenario was very “maritime” in nature; U.S. and French Air Force support was limited to surveillance, refueling, and intelligence collection. In future games, involvement of other service personnel might highlight interoperability issues that transcend services, but would affect the ability of the two navies to work together.
- In OBJECTIVE ALLIANCE 96, avoiding political and strategic issues allowed the players to focus on tactical, operational and technical interoperability. Such a narrow focus, however, may not promote future interoperability as much as other game objectives. In future games, the two navies might fruitfully explore what constraints the political leadership(s) might place on interoperability and how to deal most effectively within those constraints.
- As an administrative point, the game booklet should provide a glossary of key terms and acronyms. Acronym usage should be minimized in briefings and conversations to best facilitate communication and understanding.

16. This commentary should not be taken in any way as criticism of the highly capable members of the C4I cell. Their mastery of their specialties was impressive and the FN-USN officer interaction was extensive and profitable. The expertise present, however, was more extensive on the technical side than with command doctrine and concepts.

Appendix A: 1994 FRUS game

From 27–29 September 1994, the FN and USN held a bilateral war game in Toulon.¹⁷ The CNO (N51) and the French joint staff jointly sponsored the war game. From the USN perspective, the game was conducted within the context of the CNO's navy-to-navy program.

The war game was designed to assess the operational concepts and capabilities articulated in the French U.S. bilateral standard operating procedures. Termed "FRUSSOPs," this set of procedures exists in multiple versions. (The discussion here is based on the Mediterranean FRUSSOPs.) One of the key elements of FRUSSOPs is its definition of five levels of naval interoperability. Table A-1 summarizes interoperability levels one through four. (Level zero is no interoperability; totally independent operations.)

The war game intended to examine French-U.S. naval force interoperability at different interoperability levels for four broad functional areas:

- Sustainment
- C4I/Surveillance
- Battlespace dominance
- Power projection.

The game was organized into four player cells corresponding to these functional areas and each cell had a mix of French and U.S. officers.

17. This appendix is extracted from an October 1994 quick-look report by CNA analyst Robert R. Odell on the French-U.S. bilateral war game held in Toulon, France. It is included, in part, because of OBJECTIVE ALLIANCE 96 participants' comments about the lack of documentation for prior war games, and the difficulty of assessing progress between games.

Table A-1. FRUSSOP interoperability levels

Level 1	Level 2
Independent operations. Exchange of information and intelligence, limited to <ul style="list-style-type: none"> • Movement of friendly forces • Operational status of forces • Intentions regarding specific operations on a case-by-case basis. • Potential threats. • Tracking of high-interest shipping. 	Coordinated operations may increase operational efficiency. Coordination can be effected by means of <ul style="list-style-type: none"> • Allocation of separate geographical areas • Functional warfare responsibilities • A combination of both. Allotment of responsibilities may have time limits. ROE, rules of behavior may be exchanged.
Level 3	Level 4
Mutual support and close support allowed. Transfer of tactical control (TACON) allowed. Appropriate when in areas of common interest. ROE, rules of behavior to be as close as possible (if they are not, assess the consequences of differences).	Full cooperation in operations and logistics. ROE/rules of behavior to be common or comparable, and mutually agreed upon by higher command authority. Combined operations with a single operational controller may be authorized. Common ROE when operational control (OPCON) or TACON are exchanged. Level may be restricted in terms of time, area of interest (AOI), or specific mission.

The game focused on future interoperability; the focus was on systems that would be procured and fielded by the year 2001. The game scenario focused on a reaction to increasing Iranian control over the Straits of Hormuz. The coalition response to the crisis was a three-part evolution:

- Phase I: Deploy/deter/defend
- Phase II: Battlespace preparations
- Phase III: Transition to land warfare.

In actuality, play during the game collapsed to just two phases, each with a corresponding interoperability level. Players spent only a fraction of the time actually discussing interoperability issues. Two features of the war-game design partly accounted for this:

1. The task of developing a concept of operations in response to a difficult threat tended to distract players from focusing on French-U.S. interoperability. Before players could address interoperability in scenario context, they had to develop a

concept of operations or campaign plan. With a total of 12 hours for player/cell work, work on the concept of development displaced development of learning points on interoperability.

2. Second, the scenario, with the threat and coalition forces posed within it, elevated the required interoperability level. The crisis occurred in a highly defended choke-point area, with the bulk of coalition forces forced to be positioned outside the choke point. The posed U.S. force list was fairly limited relative to the size of the threat, especially in ASUW and ASW assets. These scenario features all naturally led to perceived requirements for high levels of interoperability and the scenario quickly moved to the highest level posed in the FRUSSOPs (level 4).

Lower-level play

The first phase dealt with initial surveillance and mine clearance operations, and occurred prior to arrival of most of the deploying naval forces. The players chose to work at interoperability level 2, with coordinated operations with either geographical division or functional area split of operations.

Key areas for integration were the need for a common tactical surveillance picture and a coordinated (if not single, integrated) mine countermeasures (MCM) database. Protecting the surveillance, mine warfare, and surface ships was one area that could drive integration beyond level 2. Integrated defense requires common ROE, which results in level 3 interoperability.

Despite the decision to operate at level 2, this was problematic within the specifics of the scenario as the operations were conducted in close proximity to potentially hostile forces, with limited coalition forces available to respond to any escalation.

Highest-level play

The second overall phase dealt with the effort to gain and maintain battlespace dominance, plus the shift to power projection. By flag

cell direction, this was played at the highest level (Interoperability level 4). During play, the following key points emerged:

- The integrated operation used a single command structure with a Combined Joint Task Force (CJTF) structure based on the USN composite warfare commander (CWC) structure, with separate afloat task forces assigned functional responsibilities (strike warfare, AAW, amphibious warfare, and undersea/surface warfare). The major French roles in the command structure were the Deputy CJTF and the strike warfare commander (the French CVTF commander). Certain key parts of the command structure, such as the CJTF Joint Intelligence Center, were to be ashore.
- Command and control structure for air targeting and tasking was posed to be split between the French TF, the CJTF flagship, and another U.S. CVN, with the Strike Warfare commander and the Combined Force Air Component commander (CFACC), and AAW commander, respectively.
- U.S. and French forces were posed to be closely linked in terms of communications and data-link grids for the following functional areas:
 - Offensive fires (air and surface strike)
 - Strike mission planning
 - Battle damage assessment
 - Surveillance
 - Suppression of enemy air defense (SEAD)
 - Combat search and rescue (CSAR)
 - Intelligence exchange
 - Production and dissemination of imagery support
 - Surface ship-centered TBMD and cooperative engagement capability (CEC)

Specific future technical systems were discussed for most of these functional areas. Procedures that would provide the context for technical systems (such as multi-level security procedures and the ATO/ATM process) were not treated in depth.

On the French side, players seemed to view this level of play as a “thought experiment”—interesting but not necessarily realistic. Senior French officers commented that the scenario escalated too quickly to hostilities. Others did not support the rationale for the U.S.-proposed command structure (based on the USN CWC structure).

The framework for French-U.S. interoperability

The following series of conclusions and judgments are from the observations during the war game.

Ample room to become more interoperable

Based on the observed interactions during the war game, there is ample room for the French and U.S. navies to become more interoperable at the staff level.¹⁸ Senior French officers did not seem familiar with much U.S./NATO terminology and basic doctrine (such as the USN CWC). In a similar vein, the U.S. officers’ appreciation for French concepts was also lower than necessary for effective interoperation in a crisis.

Deliberate distancing from political issues of coalition command relationships

The war-game design succeeded in distancing players from political issues of coalition command relationships, allowing a focus on the issues of “military” concern. Issues at the “strategic level” (the terms under which a FRUS coalition would form, and the assigned role of a single theater commander were left open). This allowed players to get into interoperability in some detail in each functional area.

18. A separate assessment would be needed for different kinds of *unit* interoperability.

Sequential development of interoperability in a crisis

A senior French officer stated that a sequential development of French interoperability with U.S. forces in the course of a crisis seemed realistic. Implied was that the French military would need time to argue the necessity of some level of interoperability at successively higher levels. French forces were unlikely to be committed early on to a high level of interoperability.

Late-joining (or late-integrating) French forces and staffs may have to be accommodated to an already existing or planned campaign plan and command structure. The U.S. scheme will likely already exist because the "state of the art" for U.S. crisis response is to fully plan out the "campaign" before execution.

In short, the war game posed the following question for real-world crises: If the U.S. approach is to conduct comprehensive campaign planning after emergence of a crisis, how will French interoperability be accommodated if French decisions are made sequentially as the crisis develops? On the one hand, the United States does not want to foreclose the involvement of partners who may not be granted early approval or orders for high levels of interoperability. On the other hand, U.S. planners will not want to leave command relationships and staff formation to be worked out in the execution phase.

Compromise between these objectives may automatically lead to a coordinated or federated, rather than an integrated, combined command structure. U.S. commands will attempt "fill-in-the-blank" assumptions about other-nation involvement; these assumptions will be adapted to reality as the situation develops. The results will likely be more a variation on the CENTCOM-center coalition in the war against Iraq than the level 4 interoperability used in the war game.

Distinction between technical and "doctrinal" interoperability

We must distinguish between interoperability in technical systems and interoperability in the broader areas of doctrine, terminology, procedures, reporting, and approaches to forming command staffs. This latter may be termed "doctrinal interoperability" and refers to the buildup of a track record in creating command and control

structures, combined staffs; developing planning products and reports; and using common terminology.

Because of the future-oriented systems feature of the war game, technical interoperability played prominently. It was clear that this type of interoperability cannot be taken for granted: it has to be deliberately designed, bought, and built. However, there was no similar approach to "doctrinal interoperability." Few of these types of issues were brought up.

There was little discussion of the FN/USN capability to operate in an integrated command structure. In terms of formation of combined staffs for the CJTF, the four afloat functional warfare commanders, the Combined Joint Intelligence Center (CJIC), and the arrangement for combined logistics, the war game emphasized the requirements for technical interoperability, *not* mutual understanding of staff functions, planning products, reports, and other non-technical requirements for operating in a combined staff.

Giving priority to FRUS technical system interoperability might be a least-risk approach. This provides a hedge against politically derived problems in coalition formation. Even if these problems prevent or inhibit development of a single combined command during a crisis, technical interoperability could still be achieved. The focus on systems compatibility also makes sense because technical interoperability requires national funding commitments with potentially long lead times for design, acquisition, and incorporation into the operating forces.

Despite these sound reasons for emphasizing technical interoperability of systems, an equal emphasis is required on interoperability in the areas of doctrine, procedures, and staff formation.

Which missions require high levels of integration?

It is important to be discriminating about which missions require high levels of command and staff integration, in addition to or apart from high levels of technical interoperability. Both types of interoperability need work to achieve some level of proficiency. Some missions might require a high level of technical interoperability, but not

require “doctrinal” interoperability. In other missions, high technical interoperability must be accompanied by high doctrinal interoperability, along with an integrated command structure. Two questions to pose:

- What are the missions for which extensive communications or data exchange are required, but which are compatible with lower levels of command integration?
- What are the missions where a high level of technical interoperability must be accompanied by an integrated—or at least highly coordinated—command structure?

An example of the latter might be air command and control. The United States, at least, seems clearly to prefer using a functional, centralized organization for air command and control, with an air tasking order (ATO) to task aircraft. The two nations’ navies may be unable to share target-related databases unless the technical interoperability is accompanied by extensive command integration. This command integration would in turn require achievement of a high level of doctrinal interoperability before the crisis.

Smoothing operations at lower levels of force integration

Although the uniformed military may prefer to anticipate and train for high levels of technical and doctrinal interoperability, this might not be possible in a contingency operation for political or other reasons. In this vein, interoperability objectives need to allow smooth operations when command structures are *not* integrated, and forces conduct their missions in parallel or in coordination. This may be termed a “maxi-mini” approach—to maximize the mutual information exchange and support at the minimum levels of interoperation. For some missions and threat environments, geographical separation of forces could allow a loose coalition, but the coalition would still benefit from mutual understanding of each other’s doctrine, and from a selective exchange of intelligence and tactical information.

For example, despite a U.S. preference for a JFACC-type C2 structure for air operations, it is probably feasible to conduct an interdiction

campaign with national forces operating with geographically separated forces and target areas.

Naval forces as early enablers of combined interoperation

Another implication of the war game involves the potential for naval forces to serve as the early arriving, on-scene enablers of a combined response to a crisis or contingency. From this perspective, the two most important aspects of FRUS interoperability might be

- The capability to conduct early combined surveillance and selective sharing of intelligence and information as the crisis or threat emerges.
- Doctrinal interoperability to allow early dispatch of liaison officers and the exchange of planners with adequate mandates to effectively coordinate operations.

An example of the latter during crisis response would be early planning for interoperation between an on-scene U.S. CVBG and a soon-to-arrive French CVTF. A specific example would be coordination for placement of combat air patrol (CAP) stations. If an adequate level of doctrinal interoperability is achieved, it may be feasible for operational planners to obtain direct liaison authority (DIRLAUTH) for such defensive measures while relationships at the political and strategic level are still being worked out.

This function of early arriving naval forces would be *enabling* in the sense that it would provide a combined framework for a subsequent arrival of other U.S. forces and command structures.

Need for a better definition of interoperability levels

The above discussion points to the need to better define the interoperability levels in the FRUSSOPs. The following questions may be worth considering:

- Should mutually agreed upon plain-language terms be used to describe levels of interoperability rather than numbers?
- Should compatible or common ROE be used as a breakpoint between levels?

- Should there be explicit reference to geo-separation of forces and areas of responsibility? Should there be explicit reference to allowing parallel command chains in some cases?

Appendix B: French Navy OBJECTIVE ALLIANCE 96 game objectives

The French Navy objectives for OBJECTIVE ALLIANCE 96, as enumerated at the game, were as follows:

- To gain an understanding of how best to conduct a common mission between the French and U.S. navies and explore whether the best method to achieve a command objective is to
 - Fully integrate French and U.S. Navy battle groups across all mission and support areas
 - Remain separate in some functional areas, while integrating the force in others
 - Remain separate in (essentially) all functional areas and conduct independent operations.
- To identify challenges to achieving interoperability at the operational/tactical level in a mid-level, (relatively) short-notice threat environment.
- To identify any forthcoming challenges to the two navies' ability to operate together.
- To identify the utility of using a seminar game for help understand the above issues.

Appendix C: OBJECTIVE ALLIANCE 96 participants

French Navy ^a		U.S. Navy	
Name	Command	Name	Command
CA J. Celerier	CCTF-470	RADM J. Luecke	N51
CV J. Tiffou	CNO staff/N8	CAPT C. McNamara	CCDG 8, N3
CV F. Cluzel	CNO staff/N6(C4I)	CAPT P.A. Moore	CO, NCTAMS-MED
CV A. Dainville	CNO staff, head CVN project	CAPT T. Venable	CCG 6/N3
CV O. Torcy	CNO staff, N3	CDR F.C. Pandolfe	OPNAV, N513C
CV A. Saint Salvy	ALFAN staff	CDR D. Pera	USDAO Paris
CF D. Fremont	Naval attaché, Washington, DC	CDR T. Pieluszczyk	OPNAV, N62
CF H. Bobin	OPS officer, FS <i>Foch</i>	CDR T. Russell	CCG6
CF P. Martin	CNO staff, CVN project office	CDR M. Salonia	CINCLANTFLT
CF P. Linares	FN NAVSEA combat systems	CDR T. Parker	Office of Program Appraisal (OPA); OPNAV, N88
CC H. Laroyenne	ALFAN/Combat Systems Bureau	LCDR K. Eyer	OPNAV, N865
LT N. Houel	CNO staff, Rafale project office	LCDR C. Cook	OPNAV, N6
		LCDR E. Langford	CCG6
		LCDR J. Tilbury	USS <i>Anzio</i> (CG 68)
		LT B. Malonson	CINCUSNAVEUR, N6
		LT S. Burke	USS <i>Cape St George</i> (CG 71)

a. French Navy rank abbreviations and their USN equivalents are as follows: CA, contre amiral, rear admiral (upper half); CV, capitaine de vaisseau, captain; CF, capitaine du frégate, commander; CC, capitaine de courvette, lieutenant commander.

Glossary

ACC	air component commander
ASUW	antisurface warfare
ASW	antisubmarine warfare
AOC	Air Operations Center
ATO	air tasking order
AWACS	Airborne Warning and Control System
BDA	battle damage assessment
CINC	Commander in Chief
CA	contre amiral (equivalent to USN rear admiral, upper half)
CEC	cooperative engagement capability
C4I	command, control, communications, computers, intelligence
CJTF	Combined Joint Task Force
CNA	Center for Naval Analyses
CNO	Chief of Naval Operations
CTAPS	Contingency Theater Automated Planning System
CWC	composite warfare commander
CV	aircraft carrier
CVBG	aircraft carrier battle group
DIRLAUTH	direct liaison authority
DSCS	Defense Satellite Communications System
EMM	état-major de la marine (French naval staff)
FN	French Navy
FRUS	French-United States
FRUSSOPs	French-U.S. standard operating procedures
JEZ	joint engagement zone
JFACC	Joint Forces air component coordinator or commander
JSAC	Joint Strike Analysis Center
LCC	land component commander
MACC	maritime air component commander

MARG	Mediterranean Amphibious Ready Group
MCM	mine countermeasures
MEU	Marine Expeditionary Unit
MEZ	maritime exclusion zone
NTM	national technical means
OPCON	operational control
ROE	rules of engagement
SATCOM	satellite communications
SOP	standard operating procedure
TACON	tactical control
TAMPS	Tactical Air Mission Planning System
TF	task force
TOT	time on target
URG	Underway Replenishment Group
VTC	video teleconferencing

List of figures

Figure 1. Air Defense at Sea syndicate's recommended C2 chart	15
Figure 2. A proposed alternative C2 structure	15
Figure 3. Final C2 structure	16
Figure 4. Basic communications architecture	18
Figure 5. Communications links for a combined FN-USN operation circa 2005	18
Figure 6. FLEETSATCOM connectivity.	19
Figure 7. DSCS connectivity.	19
Figure 8. Post-strike battle damage assessment.	23

Related CNA studies

The following CNA studies might also be of interest:

Thomas J. Hirschfeld. *Multinational Naval Cooperation Options*. Mar 1993 (Research Memorandum 93-44)

Michael T. Johnson. *Multinational Maritime Operations (MMOPS) for Naval Doctrine Command*. Sep 1995 (Annotated Briefing 95-95)

Eric S. Miller. *Interoperability of Rules of Engagement in Multinational Maritime Operations*. Oct 1995 (Research Memorandum 95-184)

Peter P. Perla. *Design, Development, and Play of Navy War Games*. Mar 1987 (Professional Paper 450)

Peter P. Perla and R.T. Barrett. *An Introduction to Wargaming and Its Uses*, Oct 1985 (Research Memorandum 85-91)

Peter P. Perla and R.T. Barrett. *Wargaming and Its Uses*. Nov 1984 (Professional Paper 429)

Peter P. Perla and D.L. Branting. *War Games, Exercises, and Analysis*. Feb 1986 (Research Memorandum 86-20)

Jeffrey I. Sands. *Blue Hulls: Multinational Naval Cooperation and the United Nations*. Jul 1993 (Research Memorandum 93-40)

Adam B. Siegel and Pascale C. Siegel. *Un Entebbe Americain: L'evacuation des ressortissants étrangers de Mogadiscio, Janvier 1991*. May 1996 (Professional Paper 537)

Adam B. Siegel. *Basing and Other Constraints on Land-Based Aviation Contribution to U.S. Contingency Operations*. Mar 1995 (Miscellaneous Paper 178)

George M. Stewart et al. *JTF Operations Since 1983*. Jul 1994 (Research Memorandum 94-42)

For copies call: CNA Document Control and Distribution Section. (703) 824-2943.